FIG. 1

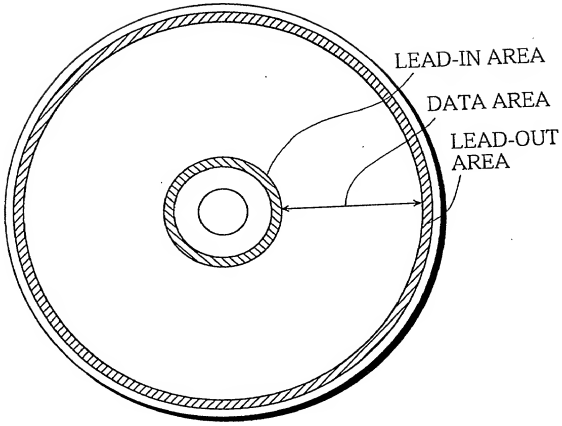


FIG. 2

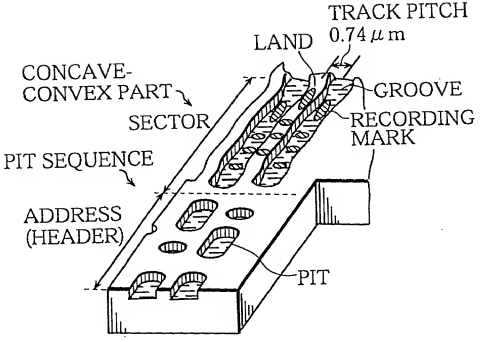

TRACK PITCH
0.74 μm
LAND
CONCAVE-
CONVEX PART
GROOVE
SECTOR
RECORDING
MARK
PIT SEQUENCE
ADDRESS
(HEADER)
PIT

FIG. 3A

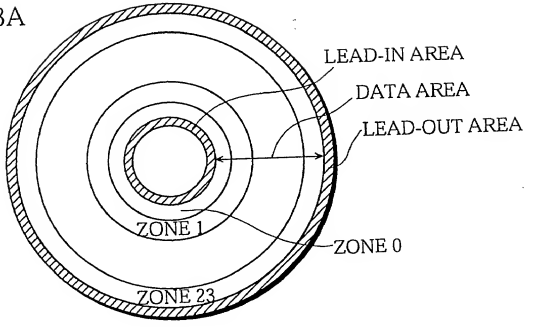


FIG. 3B

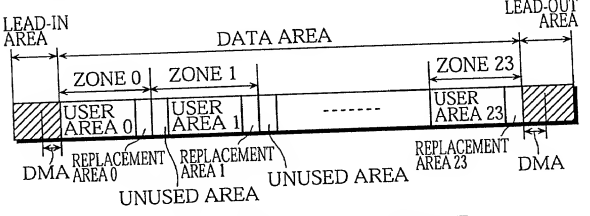


FIG. 3C

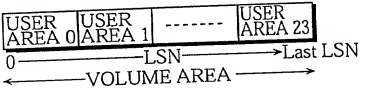


FIG. 3D

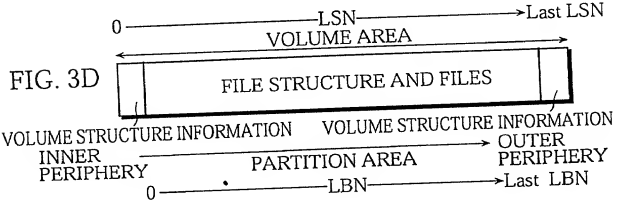
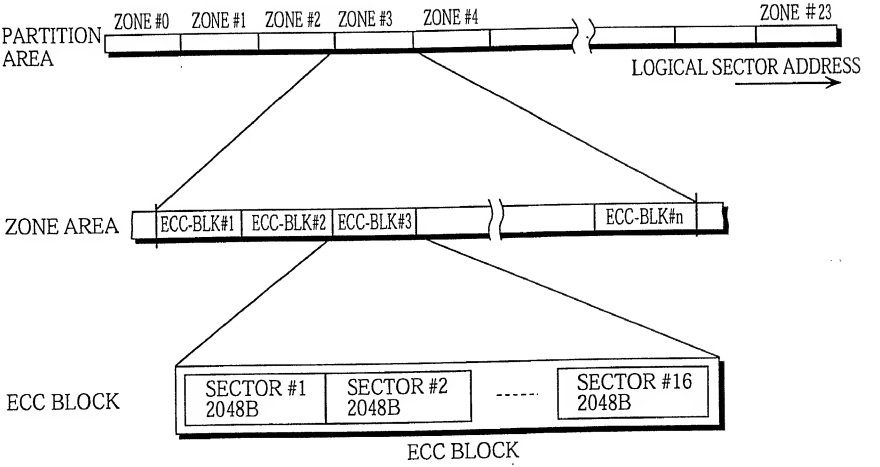


FIG. 4


PARTITION AREA
ZONE #0
ZONE #1
ZONE #2
ZONE #3
ZONE #4
ZONE #23
LOGICAL SECTOR ADDRESS
ZONE AREA
ECC-BLK#1
ECC-BLK#2
ECC-BLK#3
ECC-BLK#n
ECC BLOCK
SECTOR #1 2048B
SECTOR #2 2048B
SECTOR #16 2048B
ECC BLOCK

TOM270 EP0801660

FIG. 5

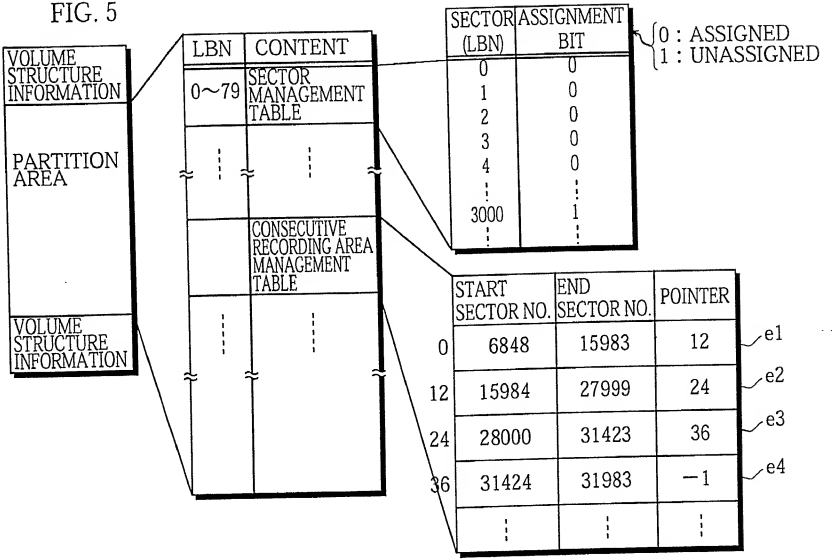


FIG. 6

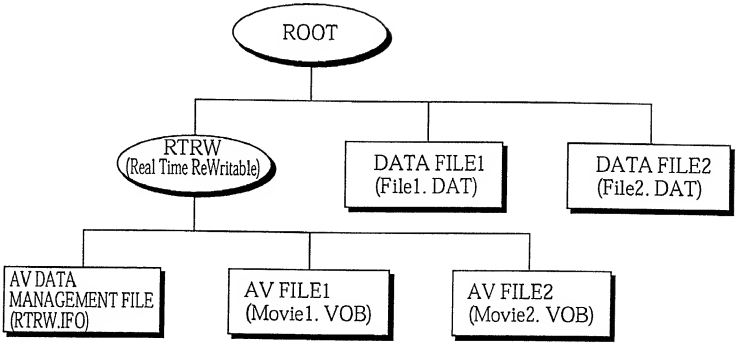

ROOT
RTRW
(Real Time ReWritable)
DATA FILE1
(File1. DAT)
DATA FILE2
(File2. DAT)
AV DATA
MANAGEMENT FILE
(RTRW.IFO)
AV FILE1
(Movie1. VOB)
AV FILE2
(Movie2. VOB)

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FIG. 7

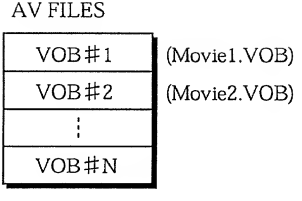


FIG. 8

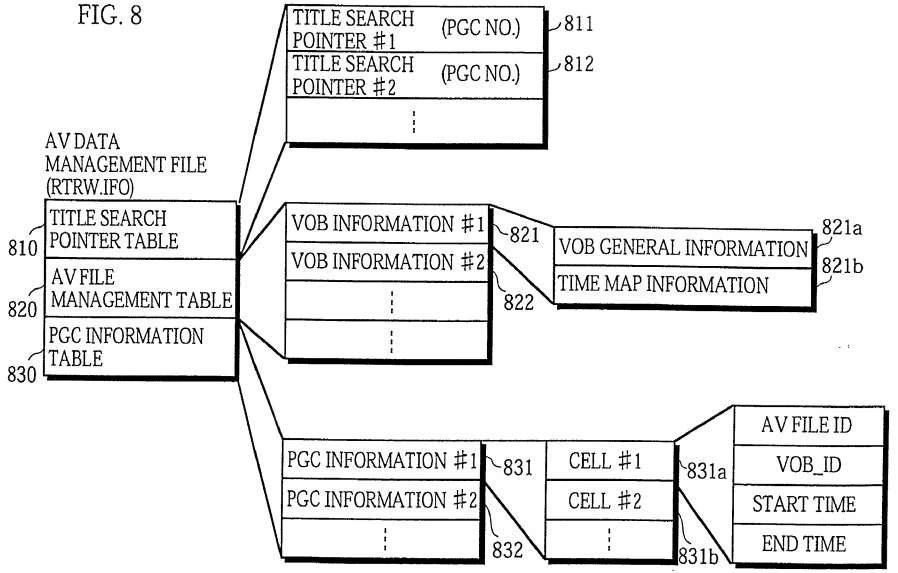
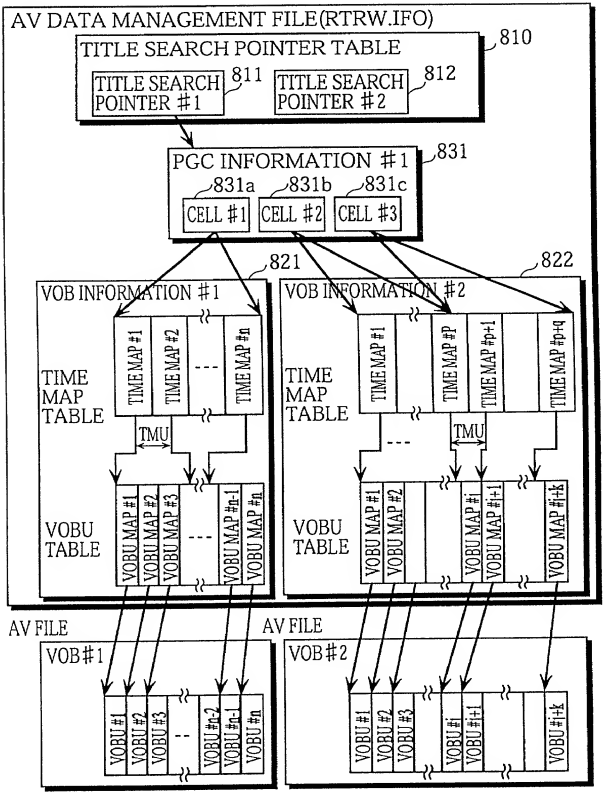

AV DATA MANAGEMENT FILE (RTRW.IFO)
TITLE SEARCH POINTER TABLE
AV FILE MANAGEMENT TABLE
PGC INFORMATION TABLE
810
820
830
TITLE SEARCH POINTER #1 (PGC NO.)
TITLE SEARCH POINTER #2 (PGC NO.)
811
812
VOB INFORMATION #1
VOB INFORMATION #2
821
822
VOB GENERAL INFORMATION
TIME MAP INFORMATION
821a
821b
PGC INFORMATION #1
PGC INFORMATION #2
831
832
CELL #1
CELL #2
831a
831b
AV FILE ID
VOB_ID
START TIME
END TIME

FIG. 9



09/10/2003 "07:24:01

FIG. 10

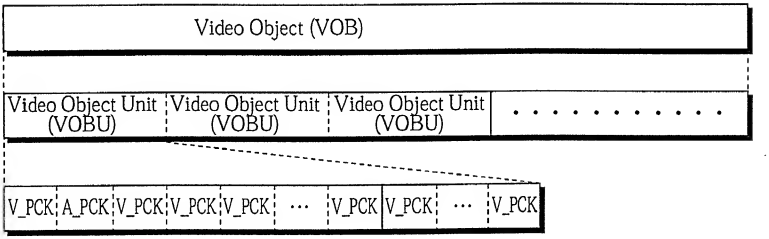
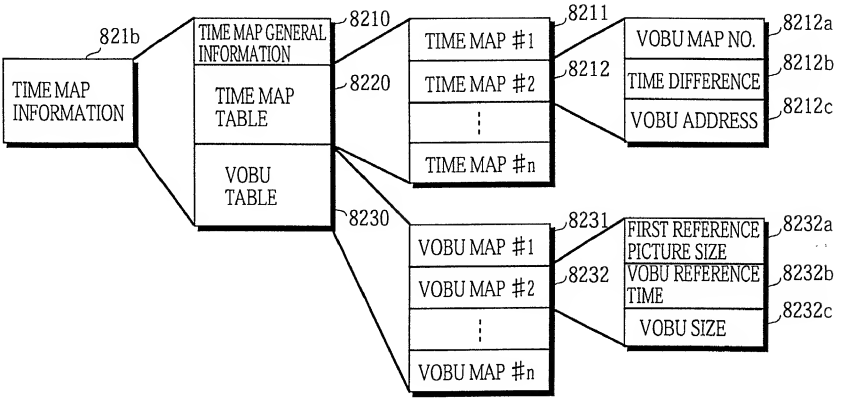

Video Object (VOB)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
V_PCK
A_PCK
V_PCK
V_PCK
V_PCK
V_PCK
V_PCK
V_PCK

FIG. 11


821b
TIME MAP INFORMATION
TIME MAP GENERAL INFORMATION
TIME MAP TABLE
VOBU TABLE
8210
8220
8230
TIME MAP #1
TIME MAP #2
TIME MAP #n
8211
8212
VOBU MAP NO.
TIME DIFFERENCE
VOBU ADDRESS
8212a
8212b
8212c
VOBU MAP #1
VOBU MAP #2
VOBU MAP #n
8231
8232
FIRST REFERENCE PICTURE SIZE
VOBU REFERENCE TIME
VOBU SIZE
8232a
8232b
8232c

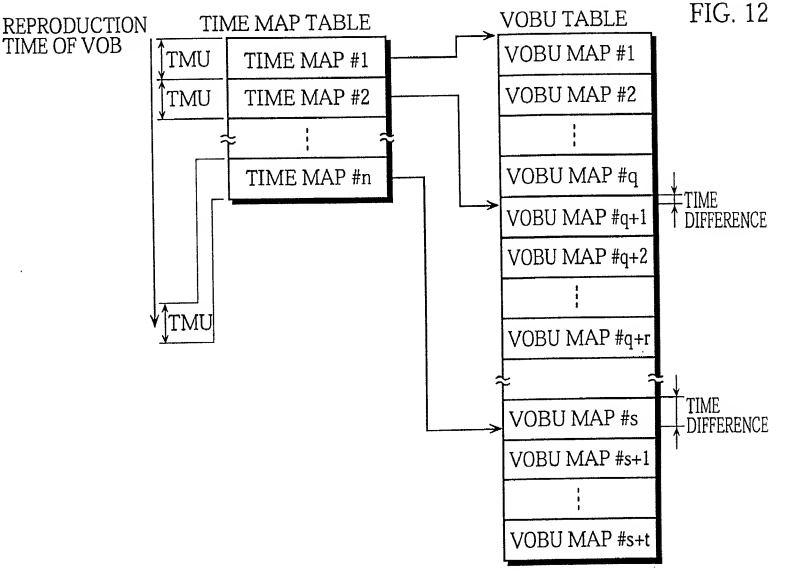

REPRODUCTION TIME OF VOB
TIME MAP TABLE
TMU
TMU
TMU
TIME MAP #1
TIME MAP #2
TIME MAP #n
VOBU TABLE
VOBU MAP #1
VOBU MAP #2
VOBU MAP #q
VOBU MAP #q+1
VOBU MAP #q+2
VOBU MAP #q+r
VOBU MAP #s
VOBU MAP #s+1
VOBU MAP #s+t
TIME DIFFERENCE
TIME DIFFERENCE

FIG. 12

FIG. 13

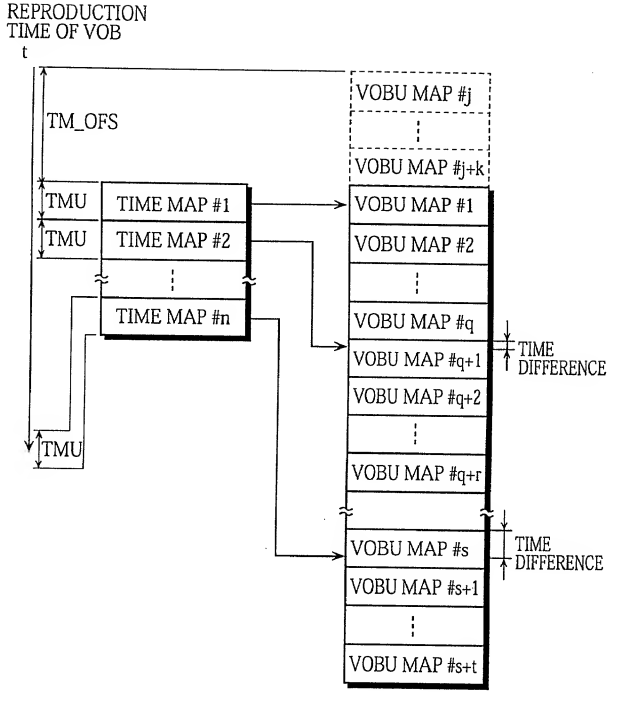

REPRODUCTION TIME OF VOB
t
TM_OFS
TMU
TMU
TMU
TIME MAP #1
TIME MAP #2
TIME MAP #n
VOBU MAP #j
VOBU MAP #j+k
VOBU MAP #1
VOBU MAP #2
VOBU MAP #q
VOBU MAP #q+1
VOBU MAP #q+2
VOBU MAP #q+r
VOBU MAP #s
VOBU MAP #s+1
VOBU MAP #s+t
TIME DIFFERENCE
TIME DIFFERENCE

FIG. 14

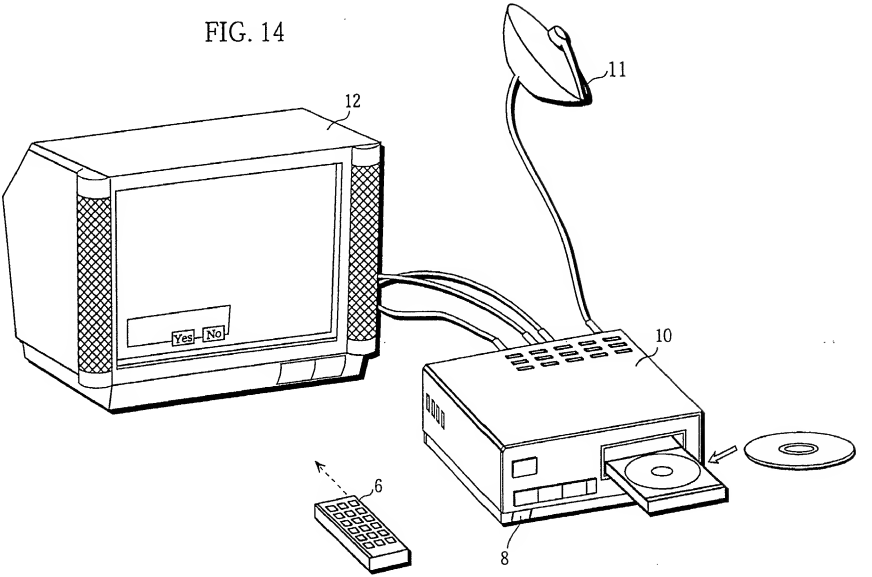


FIG. 15

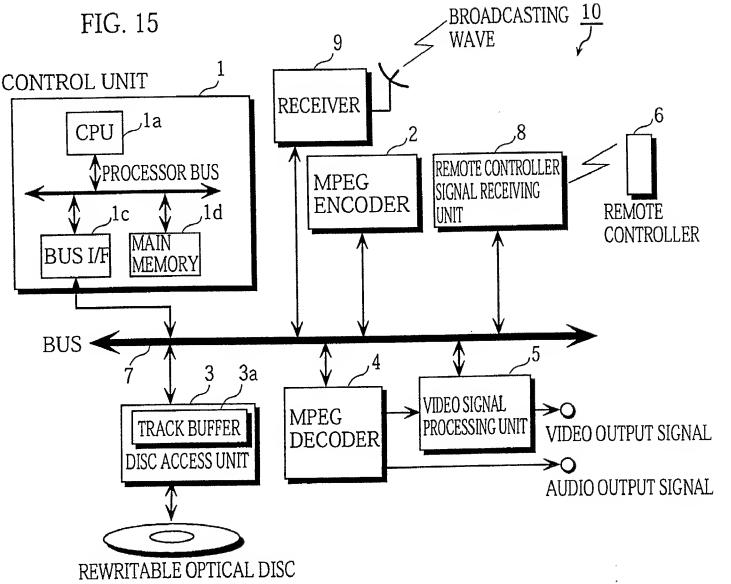

BROADCASTING WAVE
10
9
RECEIVER
CONTROL UNIT
1
CPU
1a
PROCESSOR BUS
1c
1d
BUS I/F
MAIN MEMORY
2
MPEG ENCODER
8
REMOTE CONTROLLER SIGNAL RECEIVING UNIT
6
REMOTE CONTROLLER
BUS
7
3
3a
TRACK BUFFER
DISC ACCESS UNIT
4
MPEG DECODER
5
VIDEO SIGNAL PROCESSING UNIT
VIDEO OUTPUT SIGNAL
AUDIO OUTPUT SIGNAL
REWRITABLE OPTICAL DISC

FIG. 16

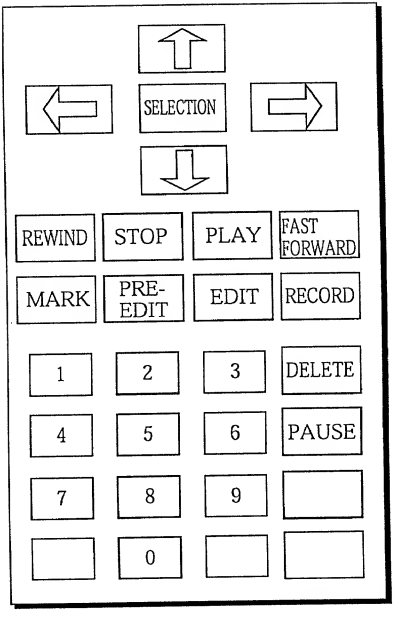

SELECTION
REWIND
STOP
PLAY
FAST FORWARD
MARK
PRE-EDIT
EDIT
RECORD
1
2
3
DELETE
4
5
6
PAUSE
7
8
9
0

FIG. 17

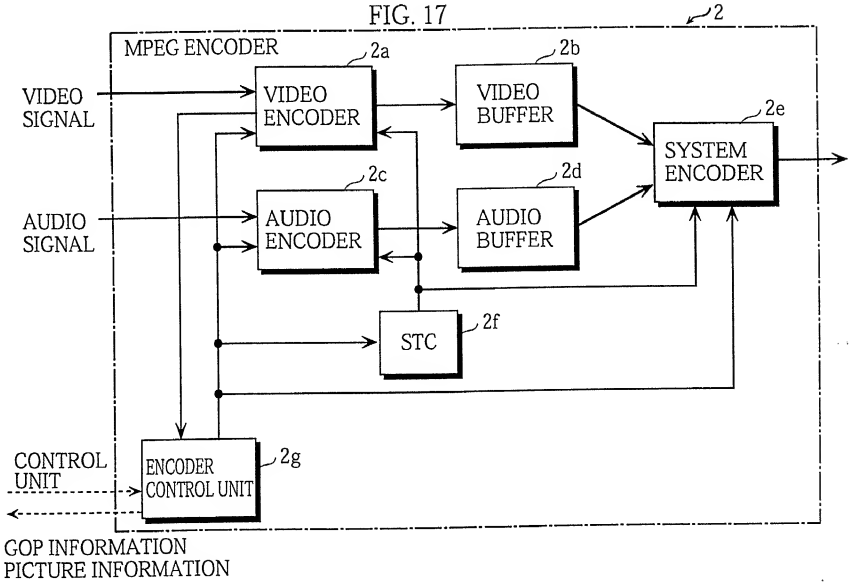

2
MPEG ENCODER
2a
2b
VIDEO SIGNAL
VIDEO ENCODER
VIDEO BUFFER
2e
SYSTEM ENCODER
2c
2d
AUDIO SIGNAL
AUDIO ENCODER
AUDIO BUFFER
STC
2f
CONTROL UNIT
ENCODER CONTROL UNIT
2g
GOP INFORMATION
PICTURE INFORMATION

FIG. 18

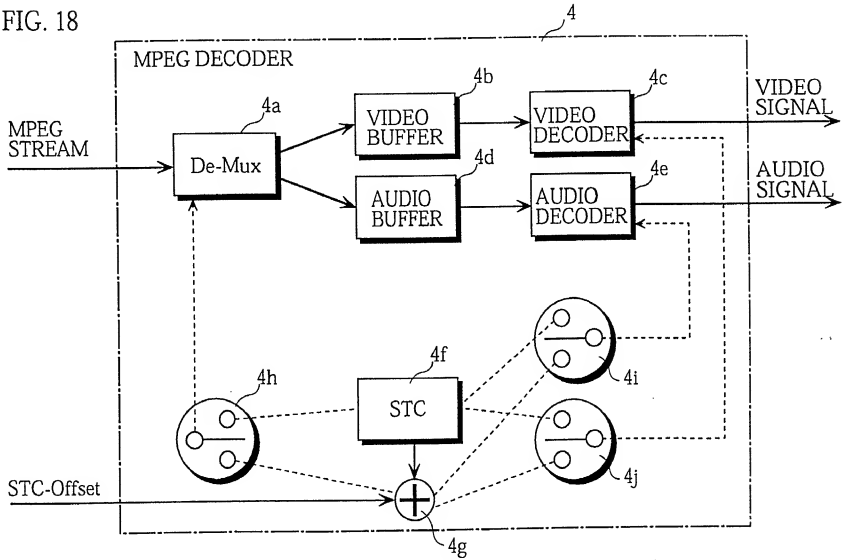

4
MPEG DECODER
MPEG STREAM
4a
De-Mux
4b
VIDEO BUFFER
4c
VIDEO DECODER
VIDEO SIGNAL
4d
AUDIO BUFFER
4e
AUDIO DECODER
AUDIO SIGNAL
4f
STC
4h
4i
4j
STC-Offset
4g

FIG. 19

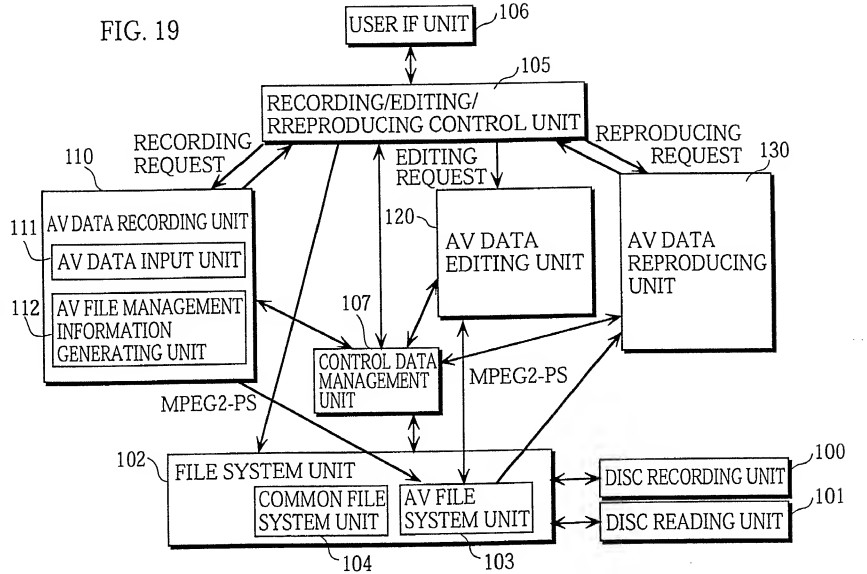

USER IF UNIT
106
105
RECORDING/EDITING/
RREPRODUCING CONTROL UNIT
RECORDING
REQUEST
EDITING
REQUEST
REPRODUCING
REQUEST
110
130
111
AV DATA RECORDING UNIT
AV DATA INPUT UNIT
112
AV FILE MANAGEMENT
INFORMATION
GENERATING UNIT
120
AV DATA
EDITING UNIT
AV DATA
REPRODUCING
UNIT
107
CONTROL DATA
MANAGEMENT
UNIT
MPEG2-PS
MPEG2-PS
102
FILE SYSTEM UNIT
COMMON FILE
SYSTEM UNIT
AV FILE
SYSTEM UNIT
104
103
DISC RECORDING UNIT
100
DISC READING UNIT
101

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FIG. 20

COMMON FILE SYSTEM UNIT 104	
CREATE	GENERATE A FILE
DELTE	DELETE A FILE
OPEN	OPEN A FILE
CLOSE	CLOSE A FILE
WRITE	WRITE A NON-AV FILE
READ	READ A FILE(COMMON TO AV AND NON-AV)
SEEK	MOVE INSIDE A DATA STREAM
RENAME	CHANGE A FILE NAME
MKDIR	GENERATE A DIRECTORY
RMDIR	REMOVE A DIRECTORY
STATFS	OBTAIN A FILE SYSTEM STATE
GET-ATTR	OBTAIN A FILE ATTRIBUTE
SET-ATTR	SET A FILE ATTRIBUTE
SEARCH_DISCON	DETECT WHETHER A SPECIFIED SECTION INCLUDES A DISCONTINUOUS BOUNDARY(ZONE BOUNDARY)

AV FILE SYSTEM UNIT 103	
MERGE	MERGE OF AVFILE1+BUFFER+AV FILE2
SPLIT	SPLIT AN AV FILE
SHORTEN	DELETE AN EDGE OF AV FILE
REPLACE	REPLACE A PART OF AV FILE

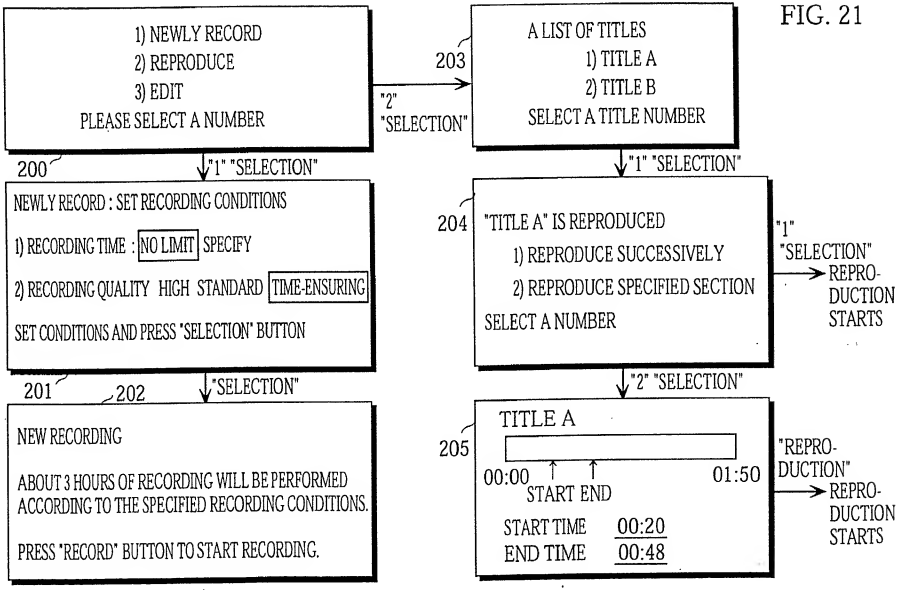
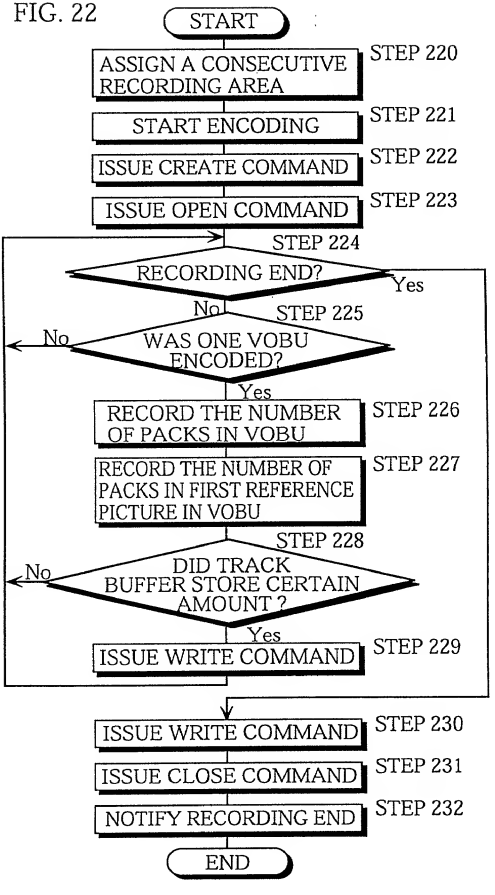

1) NEWLY RECORD
2) REPRODUCE
3) EDIT
PLEASE SELECT A NUMBER
200
"1" "SELECTION"
NEWLY RECORD : SET RECORDING CONDITIONS
1) RECORDING TIME : NO LIMIT SPECIFY
2) RECORDING QUALITY HIGH STANDARD TIME-ENSURING
SET CONDITIONS AND PRESS "SELECTION" BUTTON
201
202
"SELECTION"
NEW RECORDING
ABOUT 3 HOURS OF RECORDING WILL BE PERFORMED ACCORDING TO THE SPECIFIED RECORDING CONDITIONS.
PRESS "RECORD" BUTTON TO START RECORDING.
203
"2" "SELECTION"
A LIST OF TITLES
1) TITLE A
2) TITLE B
SELECT A TITLE NUMBER
"1" "SELECTION"
204
"TITLE A" IS REPRODUCED
1) REPRODUCE SUCCESSIVELY
2) REPRODUCE SPECIFIED SECTION
SELECT A NUMBER
"1" "SELECTION"
REPRO-DUCTION STARTS
"2" "SELECTION"
205
TITLE A
00:00
START END
01:50
START TIME 00:20
END TIME 00:48
"REPRO-DUCTION"
REPRO-DUCTION STARTS

FIG. 21

FIG. 22



EP 1 074 027 A1 09910803

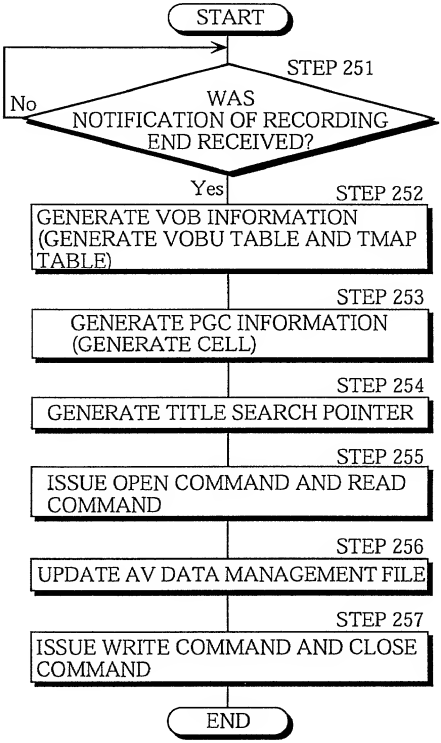
FIG. 23

VOBU NO.	NUMBER OF PACKS IN FIRST REFERENCE PICTURE IN VOBU	NUMBER OF PACKS IN VOBU
#1	14	46
#2	15	51
#3	13	49
#4	14	47
#5	14	46
#6	15	51
#7	13	49
#8	14	47
#9	14	46
#10	15	51
#11	13	49
#12	14	47
⋮	⋮	⋮
#21	15	51
#22	13	49
⋮	⋮	⋮

EP 0 807 160 A2

FIG. 24

PROCESS BY THE AV FILE MANAGEMENT INFORMATION GENERATING UNIT 112



10+270"E0801660

EP 0 720 170 A2

FIG. 25

TIME MAP TABLE

	VOBU MAP NO.	TIME DIFFERENCE	VOBU ADDRESS
#1	1	0	0
	11	0	483
#2	21	0	974
#3	⋮	⋮	⋮

VOBU TABLE

	NUMBER OF PACKS IN REFERENCE PICTURE	REPRO-DUCTION TIME	NUMBER OF VOBU PACKS
#1	14	30	46
#2	15	30	51
#3	13	30	49
#4	14	30	47
#5	14	30	46
#6	15	30	51
#7	13	30	49
#8	14	30	47
#9	14	30	46
#10	15	30	51
#11	13	30	49
#12	14	30	47
≈	≈	≈	≈
#21	15	30	51
#22	13	30	49
	⋮	⋮	⋮

FIG. 26

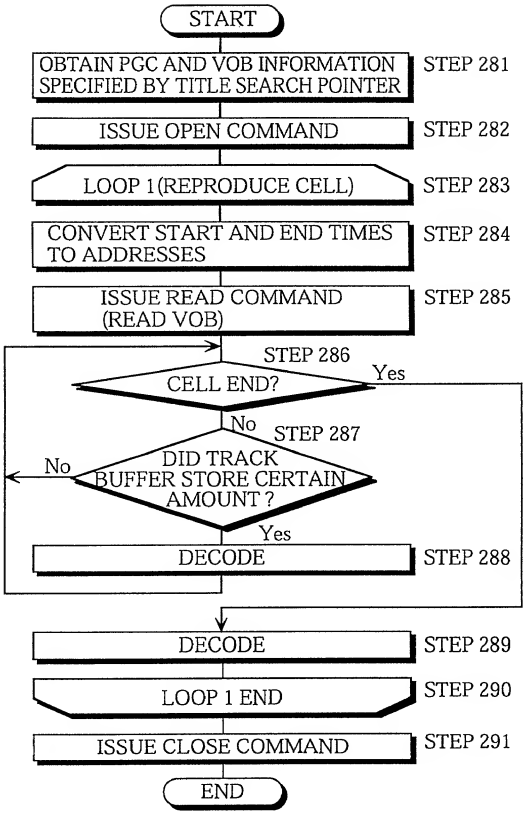


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FIG. 27

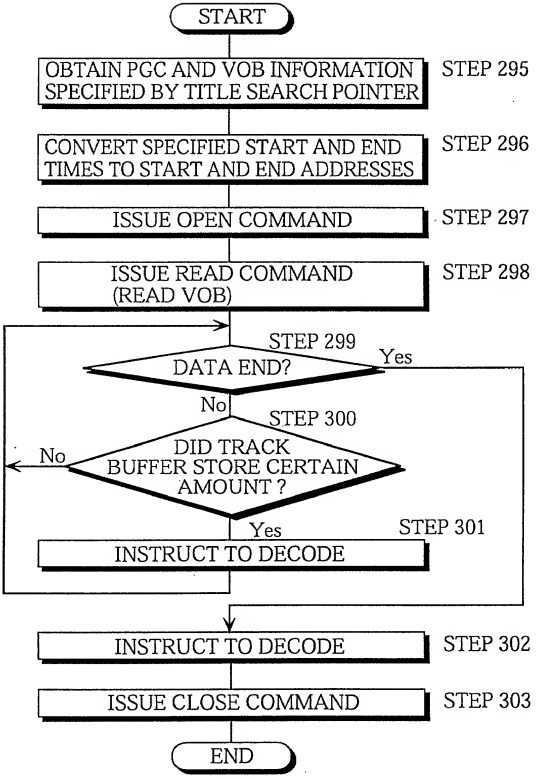

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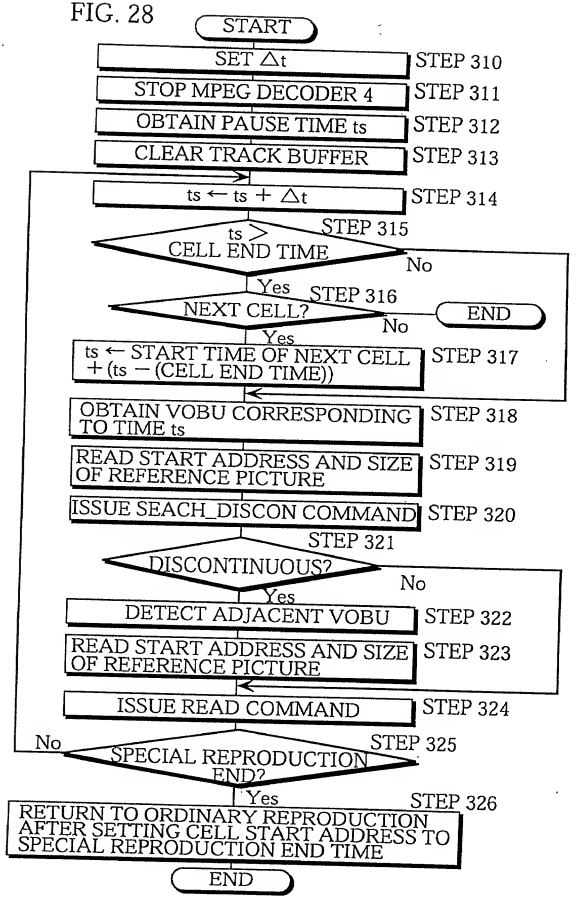
FIG. 28



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